

**Bonneville Power Administration  
Fish and Wildlife Program FY99 Proposal**

**Section 1. General administrative information**

## **Mitigate Effects Of Runoff & Erosion On Salmonid Habitat in Pine Hollow**

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**Bonneville project number, if an ongoing project**     9012

**Business name of agency, institution or organization requesting funding**  
Pine Hollow Watershed Council, c/o Sherman Soil and Water Conservation District

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**Business acronym (if appropriate)**     Sherman SWCD

**Proposal contact person or principal investigator:**

**Name**                     Jeff Hopkins-Clark  
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**Subcontractors.**

<b>Organization</b>	<b>Mailing Address</b>	<b>City, ST Zip</b>	<b>Contact Name</b>
Landowners hire contractors to complete their work. They then submit a	bill to the SWCD. The SWCD pays them the agreed upon cost-share.	Landowners are entirely responsible for maintenance.	Thus individual subcontractors are not listed.

**NPPC Program Measure Number(s) which this project addresses.**

2.2A, 3.3D, 4.1A, 7.0B.1, 7.1A.1, 7.1B, 7.1C.2-3, 7.1D, 7.6, 7.6A, 7.6B.1, 7.6B.3, 7.6B.4, 7.6B.6, 7.6C, 7.6D, 7.7, 7.8A, 7.8B, 7.8D, 7.8H, 7.8J, 10.2B, 11.1, 11.2D, 11.2E

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**NMFS Biological Opinion Number(s) which this project addresses.**

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**Other planning document references.**

Wy-Kan-Ush-Mi Wa-Kish-Wit, Volume II, Page 40 calls for improved upland management, and improved stream shading in the John Day River Basin. Note section III, Watershed Management, A, B, and C.

The following groups have taken part in planning sessions with the Pine Hollow Watershed Council (See Pine Hollow Demonstration Phase Action Plan): Bureau of Land Management (Prineville), Oregon Dept. of Fish & Wildlife (John Day), PG&E Gas Transmission Company (PGT), Natural Resources Conservation Service (NRCS), Sherman County Court, Sherman SWCD, and private landowners. For more information, see Watershed Council minutes, available from Sherman SWCD.

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### **Subbasin.**

Pine Hollow Watershed, John Day Sub-basin

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### **Short description.**

Phase 1 will implement practices to reduce erosion and flooding, allowing active and natural recovery of riparian vegetation and channel type. Phase 2 will focus on replanting or protecting critical areas within the stream corridor.

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## **Section 2. Key words**

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	X	Construction	X	Watershed
+	Resident fish		O & M		Biodiversity/genetics
+	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research	+	Ecosystems
	Climate	+	Monitoring/eval.	+	Flow/survival
+	Other	+	Resource mgmt		Fish disease
		+	Planning/admin.		Supplementation
			Enforcement	+	Wildlife habitat en-
			Acquisitions		hancement/restoration

### **Other keywords.**

Hydrology, Stream Temperature, Riparian Vegetation, Streambank Erosion

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## **Section 3. Relationships to other Bonneville projects**

Project #	Project title/description	Nature of relationship

## Section 4. Objectives, tasks and schedules

### *Objectives and tasks*

Obj 1,2,3	Objective	Task a,b,c	Task
1	Assess Condition	a	Range Assessment-COMplete
		b	Riparian/Channel Assessment-complete by spring 1998
2	Mitigate Peak Flow Events	a	Plan improved range management
		b	Install cross-fencing for better livestock distribution/utilization
		c	Install spring developments for better livestock distribution/utilization
		d	Reseed critical areas - areas in poor/fair condition
		e	Install field terracing and water and sediment control basins for control of runoff/erosion from grain fields
3	Enhance summer flows	a	Slow water runoff through measures described above and improve water-holding capacity of riparian area.
4	Encourage riparian and stream channel recovery	b	Establish riparian pasture systems
		c	Provide sources of water in the uplands
		d	Establish cross-fences to allow more even livestock distribution
		e	Establish ungrazed buffer strips through continuous CRP
		f	Actively plant woody riparian species in critical areas.
5	Reduce summer temperatures	a	To be achieved through measures described above.
6	Improve upland wildlife habitat	a	Establish upland water sources - springs and "guzzlers"
		b	Establish tree plantings in natural or artificial wet areas in uplands
		c	Grass/legume seedings
		d	Other projects described above
7	Monitor	a	Track steelhead spawning activity

			through redd counts - ONGOING
		b	Photopoints at all project sites, and photo monitoring of range condition at individual ranches.
		c	Continuous temperature monitors
		d	Proper Functioning Condition assessments

### ***Objective schedules and costs***

<b>Objective #</b>	<b>Start Date mm/yyyy</b>	<b>End Date mm/yyyy</b>	<b>Cost %</b>
1	10/1996	8/1998	12.50%
2	10/1996	12/2001	25%
3	10/1996	12/2001	0%
4	03/1998	12/2004	25%
5	10/1996	12/2004	0.00%
6	8/1998	12/2004	12.5%
7	3/1996	12/2010	25%
			TOTAL 100.00%

### **Schedule constraints.**

Engineering assistance from NRCS is limited.

Riparian work will not be started until upland work is completed. The main constraint to riparian recovery is excessive peak flows. Completion of upland runoff control work may be considered a milestone.

### **Completion date.**

2004

## **Section 5. Budget**

### ***FY99 budget by line item***

<b>Item</b>	<b>Note</b>	<b>FY99</b>
Personnel	3 people, ~1/2 FTE, total value ~\$12,000. BPA share: 18%, Other Sources: GWEB, ODA, Sherman County	\$2,117
Fringe benefits	Total value, \$3000, Other info as above	\$529
Supplies, materials, non-expendable property		0
Operations & maintenance	100% provided by landowners	\$0
Capital acquisitions or improvements (e.g. land,	Memory Upgrade: \$85, Speed upgrade, \$99, and hard drive upgrade, \$224	\$413

buildings, major equip.)		
PIT tags	# of tags:	\$0
Travel		\$0
Indirect costs		\$0
Subcontracts	Total value: \$53,257. BPA: 45%, GWEB: 45%, Landowners: 10%	\$23,901
Other		0
<b>TOTAL</b>		<b>\$26,960</b>

### ***Outyear costs***

<b>Outyear costs</b>	<b>FY2000</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03</b>
Total budget	\$30,000 (BPA)	\$30,000 (BPA)	\$15,000 (BPA)	\$15,000
O&M as % of total	0.00%	0.00%	0.00%	0.00%

## **Section 6. Abstract**

Pine Hollow Watershed provides twenty miles of potential steelhead habitat which has been degraded by high peak flows, low summer water levels, and high peak temperatures. Riparian soil and vegetation have been removed in certain places by flood events and by maintenance activities on a natural gas pipeline through the lower six miles of the canyon. The goal of this project is to encourage the recovery of the stream by slowing runoff during the peak flow events, allowing the slow, safe release of water during the summer and further allowing buildup of sediment and riparian vegetation. After this has been achieved, the project would actively plant woody riparian species in critical areas. These actions would improve spawning and rearing habitat by increasing flow during critical months, reducing damage to riparian vegetation, reducing summer water temperatures, and allowing recovery of channel morphology. Deer, elk, and upland birds would also benefit by enhanced water sources in the uplands. Specific projects include development of grazing management plans, riparian pastures, exclosures, cross fencing, water/sediment control structures, and native grass and tree plantings. The method emphasizes the top-down approach to watershed recovery – begin at the ridge top, and work toward the stream. This method has repeatedly been shown to be the most cost effective. Upland work will be completed by 2001, and active riparian plantings completed by 2004. Monitoring would consist of spawning surveys, continuous temperature readings, photopoints, and physical stream surveys. This would continue for ten years past the end of the last implementation phase.

## **Section 7. Project description**

### **a. Technical and/or scientific background.**

Pine Hollow runs into the west side of the John Day River at RM 85. The ability of the Pine Hollow Watershed to function properly has been seriously impaired by historic management and human activity in the watershed and by natural catastrophic events. Poor water distribution, large pasture size, and poor forage condition in some of the uplands create uneven grazing patterns and areas of degraded range conditions. The riparian and bottom areas have been areas of livestock concentration, as well as ground disturbance by Pacific Gas Transmission (PGT) for gas pipeline installation and maintenance. These activities, combined with catastrophic flood events (1964, 1978, 1995, and 1996), have left sections of the bottom of Pine Hollow and some of its tributaries dry and stripped of vegetation.

Pine Hollow contains summer steelhead and inland redband trout. Historically, Pine Hollow provided about twenty miles of spawning habitat. Destruction of riparian vegetation by livestock concentration, PGT maintenance activities and catastrophic flood events is responsible for destructive effects to spawning and rearing habitat, including low summer flows, and high water temperatures. In April 1996, the BLM, SWCD, landowners and ODFW collaborated on a spawning and population survey. This survey found that the main channel of Pine Hollow consisted of 80% dry channel, with the most degraded and dry channel occurring in the lower reach, from RM 0 to RM 5.5. High peak flows during winter interfere both with rearing and with migration success. Nevertheless, steelhead and redband trout were found in all reaches of the main channel, and in some side canyons. In 1996, one redd (egg cluster) was found in two miles of stream. In 1997, five redds were found in nearly the same survey area.

The PGT pipeline was installed in 1961. In December 1964, a flood caused sections of pipe up to 1000 feet long to be exposed and floated due to scouring. As a result of this and other storms, PGT has annual to biennial maintenance requiring the use of heavy equipment in the lower 6.8 miles of Pine Hollow to maintain its access road and the protective covering of soil and rock on the pipeline. With improved riparian vegetation and channel stability, the need for mechanical maintenance should be considerably reduced.

If the current problems in the Pine Hollow Watershed are not addressed the area will continue to experience accelerated surface runoff, leading to erosion, flooding, and siltation of spawning beds which could eliminate fish habitat.

**TABLE: Measures in the Northwest Power Planning Council's Fish and Wildlife Program satisfied by funding this program:**

<b>Section.sub</b>	<b>Comments</b>
2.2A	Native habitat exists and is utilized in Pine Hollow, but is degraded.
3.3D	We propose to begin gathering data to document changes in habitat and populations. The chance to gather baseline data is passing.
4.1A	Project will rebuild a native steelhead run consistent with the principles listed in this section.
7.0B.1	Project will help implement an acknowledged local watershed plan.
7.1A.1	Project will evaluate tributary survival, ecology, carrying capacity and limiting factors.
7.1B	Project will save a genetically distinct, wild steelhead run.
7.1C.2-3	Project will gather data on a genetically distinct, wild steelhead run.
7.1D	Project will gather data including redd counts, habitat range, and habitat information, such as temperature and flow rate.
7.6	Project aimed at improving habitat based on integrated watershed approach.
7.6A	Project coordinates human activities on a watershed scale; improves productivity of steelhead habitat critical to recovery of a weak stock.
7.6B.1, 3, 4	Project aimed at improvement of poor condition habitat for a weak run; project integrated into a broader watershed effort promoting cooperative agreements with private landowners and several state and federal agencies; project follows a model (Buck Hollow) which achieves high level of results per dollar of funding.
7.6C	Project coordinates assessment, planning and monitoring efforts of BLM, ODFW, SWCD, landowners and others.
7.6D	Project objectives are consistent with objectives expressed in 7.6D - specifically, sediment, bank stability, water quality, quantity & timing, pools, riparian vegetation, stream morphology, grazing, and roads.
7.7	Project emphasizes integration of volunteer planning and implementation with state, federal and local government technical assistance and planning.
7.8A	Project implements some habitat restoration on BLM land, and integrates their efforts on cooperating private lands; project involves NRCS implementing soil erosion control in uplands.
7.8B	Project will implement BMP's for soil and stream/riparian protection; project will establish data on success of these measures in restoring steelhead run.
7.8D	Project will replant degraded streambanks, and includes use of a greenhouse at S. Sherman Elementary school for propagation and education.
7.8H	Project emphasizes water conservation through sediment basins, terraces and spring development.
7.8J	Project will emphasize increased in-stream flows through slow release from water/sediment basins, improved vegetative cover, enhanced riparian vegetation; project will document changes in in-stream flow.
10.2B	Pine Hollow contains redband trout; project will improve degraded habitat for redband trout, as well as other resident fish species through comprehensive watershed plan.
11.1	Project will provide riparian and upland habitat for wildlife species impacted by hydroelectric dams.
11.2D	Project uses least cost approaches, has measurable objectives, protects high-quality native habitat, both riparian and upland.
11.2E	Project improves habitat for bald eagle, peregrine falcon, black-capped chickadee, sharp-tailed grouse, sage grouse, elk, antelope and mule deer, as well as others.

Sherman Soil and Water Conservation Districts began watershed planning efforts in 1990 with the Buck Hollow Project. This watershed straddles the boundary between Wasco and Sherman Soil and Water Conservation Districts, and the two districts partnered to start an intense, landowner-driven watershed enhancement project in that watershed. Fiscal partners in that watershed included individual landowners, USDA Natural Resources Conservation Service (NRCS), BPA, Oregon Department of Fish and Wildlife

(ODFW), Governor's Watershed Enhancement Board (GWEB), Northwest Steelheaders, and other private sources. Technical partners included NRCS, ODFW, and Bureau of Land Management. After that project began showing early successes, landowners in Pine Hollow, many of whom had also taken part in the Buck Hollow Project, approached the conservation districts about starting a similar project with nearly identical goals in Pine Hollow. By 1996, the landowners had formed a Watershed Council to set direction and policy for the project. The Bureau of Land Management and Oregon Department of Fish and Wildlife have assisted the District and the Council in assessment and monitoring efforts. NRCS has provided technical assistance in construction of structures and fences. Pine Hollow is located in both Sherman and Wasco Counties. Wasco SWCD has provided a certain amount of initial funding, but has agreed to leave most of the coordination and fiscal responsibilities to Sherman SWCD.

**b. Proposal objectives.**

1) Assess Condition: The overall condition of the watershed has been assessed during watershed council sessions through conversations between private landowners, Pacific Gas Transmission Company representatives, and technical personnel from the NRCS, BLM, ODFW, and SWCD. Conclusions from these sessions have formed the basis for early actions in the watershed. To gain a more detailed picture, however, the District has contracted a range conservationist to review condition of range belonging to participating landowners, and to update or complete their range management plans. At least four individual ranch plans will result from this effort. Furthermore, the District, BLM and ODFW have agreed to take part in a stream survey using the Proper Functioning Condition (PFC) method developed by BLM. Landowners have participated in a seminar hosted by Oregon Cattlemen's Association which took them through the PFC process on a typical stream reach in Pine Hollow, thus preparing them to assist in PFC assessment on their own property. Completion of PFC assessment in the watershed by personnel from ODFW, BLM, the SWCD and individual landowners will result in a map of stream reaches showing areas on functioning stream, nonfunctioning stream and at-risk areas. This document will be used to plan for objective 4, described below.

2) Mitigate Peak Flows: One of the major causes of damage to fish habitat in Pine Hollow is the peak flow events which occur either during rain/snowmelt on frozen ground events in the winter or during intense summer thunderstorms. These events are partially responsible for removing riparian vegetation and altering stream morphology either through downcutting or stream widening. Furthermore, the frequency of these events prevents recovery of the stream channel and riparian corridor. It follows that this detrimental effect must be overcome before any other fish habitat objectives can be met.

A TR-20 watershed runoff analysis performed in Spears Canyon in 1992 provides some guidance on what kind of results can be achieved by this sort of project. Spears Canyon is a tributary to neighboring Buck Hollow. The TR-20 is a model developed by NRCS to estimate runoff levels in various watersheds, given various soils, vegetative cover, and land use practices. In Spears Canyon, it was shown that under existing land use practices and vegetation, the installation of Water and Sediment Control Basins (WASCOBs) would reduce runoff by 26%. This analysis did not include the effects of improved range



conditions due to quicker rotations, smaller pasture sizes and critical area seedings. However, when these practices are modeled, they have an even greater (and longer lasting) impact on runoff than WASCOBs. Thus, it is conservative to project a 50% reduction in peak flows through a combination of WASCOBs and range management improvements resulting in healthier vegetative cover throughout the watershed.

3) Enhance Summer Base Flows: This objective goes hand-in-hand with the one described above. Water which is stored in healthy grassland soils, riparian areas, or structures is eventually released from springs during the summer months. Thus, whenever peak flows can be mitigated, base flows will simultaneously be raised. The objective of this project is to return 100% of Pine Hollow's 20 miles of potential fish habitat to perennially flowing stream.

4) Encourage Riparian and Stream Channel Recovery: Besides the measures involved with meeting objectives 2 and 3, recovery of the stream corridor will require careful management of both riparian grazing. Grazing management plans to improve upland range conditions will also make provisions for the separate, careful management of grazing in riparian areas. The objective is to observe an improving trend in stream/riparian function over the next fifteen years.

5) Reduce Summer Water Temperatures: Increased summer base flows and increased stream shading will result in lowered summer water temperatures. To improve steelhead survival rates, summer water temperature must not exceed 64°F in the summer months. This objective should be met once significant regrowth has occurred in riparian vegetation, and stream channels have narrowed and deepened due to channel recovery.

6) Improve Wildlife Habitat: Improved grassland health, increased upland water sources, and a healthy riparian corridor should result in greater carrying capacity for wildlife.

7) Monitor: The results of this project should be tracked in order to serve as a model for future efforts to maximize ecological benefits in Eastern Oregon. Monitoring data will be collected and stored by Sherman Soil and Water Conservation District and will be available to cooperators.

### **c. Rationale and significance to Regional Programs.**

The major pollution factor limiting the quality of salmonid habitat in the interior Northwest is changes in the hydrologic cycle. Changes in vegetative cover due to historic landuse have accentuated the extreme high flows in the winter and extremely low baseflows in the summer. High flows in the winter are the major cause of streambank erosion and removal of riparian vegetation. Grazing pressure on riparian pastures due to historic management practices is also a contributing factor. Low base flows and lack of riparian vegetation are responsible for lethally high summer water temperatures. This project proposes to treat the causes of habitat degradation, rather than the symptoms. By altering management practices, the causes of degradation are removed, and the stream can recover. This approach is the most cost-effective because it de-emphasizes in-stream structures which are expensive to build and subject to damage from high flows. Risk is minimized, because hazards arising from upstream are reduced before downstream measures are considered. Furthermore, operation and maintenance costs are left to the

individual ranch operators, who accept these costs as part of their ranch expenses in return for the more productive ranch they expect to have due to improved range condition. This is exactly the same approach being used in Buck Hollow, a highly successful watershed restoration project being managed by the same SWCD and with many of the same participants. Furthermore, the watershed approach also benefits other species of wildlife, as called for in section 11 of the Columbia River Basin Fish and Wildlife Program.

#### **d. Project history**

This project has not been previously funded by BPA, but has been active using other funding sources since 1996.

Ranch planning efforts began in 1996. To date, four plans are in progress, two new plans and two updates. These plans will call for smaller pasture size, quicker rotation, and reduced grazing pressure on riparian areas. In addition, on-the-ground projects began in 1996 and continued in 1997. These projects include three cross-fences, one of which creates a riparian pasture, three water and sediment control basins (WASCOBs), 5000 feet of field terracing, one spring development, two critical area grass seedings, and one grass stand enhancement (including juniper thinning). These projects were funded by a grant from Oregon Department of Agriculture for \$19,328, with a 10% contribution on the part of the landowners, and approximately \$9000 in cost-share provided by USDA Farm Services Agency.

The Governor's Watershed Enhancement Board (GWEB) has awarded \$103,000 for the 1998/99 biennium (July 1997-June 1999). Planned projects include stream assessment using the Proper Functioning Condition method (PFC), two miles of cross fence, 230 acres of critical area range seedings, four WASCOBs, three spring developments, and 1.5 miles of field terracing. GWEB requires monitoring at every site of on-the-ground work which they fund.

USDI Fish and Wildlife Service has contributed \$15,000 for habitat improvements on private lands.

Another \$26,466 is required to complete the planned projects.

One large landowner is considering putting every stream bottom on their ranch into the Continuous Conservation Reserve Program (cCRP), and removing cattle from the entire ranch, uplands and stream bottoms alike. As part of the cCRP, the landowner would plant native or locally adapted trees in every stream reach with suitable soil. The landowner expects to make a final decision in early spring, 1998.

#### **e. Methods.**

Phase 1 of the Pine Hollow Watershed project consists of range management improvements and associated capital improvements. Range management plans are the most cost-effective improvement that can be made to a range-dominated watershed. By managing cattle to even out grazing pressure throughout the watershed, grazing pressure can be reduced near streams, springs and lowlands. Hand-in-hand with these plans comes

the capital improvements necessary to implement them. First among these are fencing projects. In some cases, very large upland pastures must be broken down into smaller units to allow more even livestock distribution and forage utilization. In other cases, riparian areas are split off from upland pastures. Where this is accomplished, cattle can be excluded from riparian areas during the growing season, and in some cases, are excluded altogether. Some participants are considering putting their riparian areas into the Continuous Conservation Reserve Program, which would require exclusion of livestock and planting of locally-adapted trees. Upland springs can be developed as water sources for upland pastures, which may formerly have been underutilized due to lack of water.

Another aspect of Phase 1 is stabilizing runoff and erosion from the upland regions. Improved range condition is the long term solution to this. In the short term, however, quicker results (years versus decades) can be achieved by installing water and sediment control basins (WASCOBs). These basins are installed near the upland sources of tributary canyons. They collect a portion of runoff water before it reaches the riparian area and slowly release it through subterranean flow over a period of approximately sixty days (USDA NRCS Field Office Technical Guide), thus moderating peak flows and recharging aquifers in the uplands. This reduces damage to riparian areas and stream channels from peak flows and also contributes to enhanced summer flow as groundwater is released into the stream system by springs downhill from the WASCOBs.

Phase 2 consists of actively enhancing critical riparian areas. This phase will begin once the danger of damaging flood events has been reduced by Phase 1 activities. Where soil suitable for tree planting exists, native or locally adapted species will be planted to speed the natural recovery of riparian vegetation where it has been damaged. Plantings will consist of woody species because the sediment type (sand/gravel/cobble) in Pine Hollow is more suited to woody riparian vegetation than to reeds and rushes.

For the most part, the existing channel morphology will not be actively manipulated. It has been demonstrated by BLM (TR 1737-9 1993) that management changes such as have been outlined here will, over time, lead to a recovery of channel morphology. On the other hand, in-stream structures are expensive and prone to destruction during high flow events.

Monitoring will consist of four main activities: photopoints, spawning surveys, temperature monitoring, and Proper Functioning Condition assessments (PFC).

Photopoints will be established prior to installation of each new capital improvement, and will be updated annually for ten years. Photopoints will also be established in the mainstem and updated during each spawning survey. We expect to see an improvement in range condition, as well as some semi-riparian growth around WASCOBs.

Spawning surveys will be conducted annually along three miles of stream in mainstem Pine Hollow and Bath Canyon (a.k.a. Long Hollow), one of the largest tributaries. These surveys will be conducted by teams consisting of personnel from Oregon Department of Fish and Wildlife (John Day Office), Bureau of Land Management (Prineville Office), Watershed Council members, landowners and SWCD employees. Surveys have been conducted in 1996 and 1997, with one and five redds discovered, respectively. We would

expect spawning activity to rise over the next ten years as stream habitat conditions improve.

Temperature is monitored by HoboTemp continuous data loggers at two sites – one in the mainstem, and one in Bath Canyon. These will be downloaded during each spawning survey by SWCD personnel. Our expectation is that the maximum seven day average temperature for the year would fall as base flows increase and riparian vegetation recovers.

PFC is a technique used and taught by USDI BLM, U.S. Forest Service, USDA NRCS, and Oregon Cattlemen's Association. The technique is a survey of stream physical and vegetative condition. With photopoints, it can provide a good comparative record of changes in stream condition, as well as a method of conducting triage. PFC surveys will be conducted in 1998, and again in 2004 or 2005. PFC teams will consist of personnel from the SWCD, ODFW, BLM and individual landowners. We would expect to find more of the stream evaluated as "Properly Functioning" or "Functioning at risk -- with an upward trend" as riparian vegetation increases and stream channel morphology returns to a deeper, narrower form with desired floodplain characteristics.

#### **f. Facilities and equipment.**

Equipment used in this project can be broken into two categories: office equipment and field equipment.

Office equipment is used by SWCD personnel in the administration and coordination of the project. The SWCD has two personal computers, three printers, a copy machine, and a fax.

The fax is relatively new, while the copy machine is relatively old. After approximately 100 copies are run in a given day, copy quality begins to suffer. The equipment should be updated, but funds for this are not requested in this budget.

Of the two office computers, one is a Pentium 233 with 32M RAM, the other is a 486/60, with 8M RAM. The first computer is used by the watershed coordinator for word processing, spreadsheets and mailings. The other is used by the district administrator, who acts as fiscal agent. The only color printer in the office is used by the district administrator. The district administrator's computer has neither the necessary RAM or hard drive to run Office 95 applications. Because of this, access to the color printer is limited to older, less memory-intensive software. Any files to be used by both the coordinator and the administrator are also limited to the older software. An upgrade is advisable, and is requested in the budget.

Field work can be broken into two categories, as well: Installation and Monitoring.

Installation of fencing and sediment basins is performed either by individual landowners or their contractors. Equipment for these purposes will not be described here.

Assessment and monitoring is performed by teams consisting of SWCD personnel, watershed council volunteers, and agency personnel from BLM, ODFW or other agencies. All-terrain vehicles (ATVs) are necessary for access to the canyon. So far, these have been loaned for specific purposes by landowners and by the BLM. The SWCD does not own an ATV. Some computer hardware is required to download the continuous temperature monitors which are installed in two locations in the stream. The

SWCD expects to buy the necessary hardware using GWEB funds during the 1998 fiscal year.

**g. References.**

USDI Bureau of Land Management Proper Functioning Condition Work Group. 1993. Riparian Area Management: Process for Assessing Proper Functioning Condition. TR 1737-9. U.S. Department of the Interior, Bureau of Land Management, Denver, Colorado.

## **Section 8. Relationships to other projects**

The project is very similar to the Buck Hollow 2000 Watershed Enhancement Project (Project #9303000). Sherman SWCD is a sponsor of both projects. Five of the participating landowners in Pine Hollow also participated in the early years of Buck Hollow. The goals, objectives and methods are all very similar, as are the land uses, soils, topography and climate. Pine Hollow sits directly to the east of Buck Hollow.

## **Section 9. Key personnel**

Resumes are submitted below for the four individuals who put in the most hours to the Pine Hollow Project. In addition to these individuals, several other individuals contribute specialized knowledge to the project:

Tim Unterwegner, Fish Biologist, ODFW, John Day, OR

Mike Grey, Fish Biologist, ODFW, John Day, OR

Darren Brumbach, Fish Biologist, USDI BLM, Prineville, OR

Mary D'Aversa, Hydrologist, USDI BLM, Prineville, OR (Note: Mary is transferring and will be replaced by another hydrologist.)

Craig Obermiller, Rangeland Management Specialist, Prineville, OR

### **Linnea Holmes**

#### **Pine Hollow Project Planner and Range Management Specialist**

**Approximately 25 hours per month devoted to Pine Hollow**

#### **Current Responsibilities:**

Contracted by Sherman SWCD in June 1996 to develop range plans with private landowners in the Pine Hollow Watershed. Duties include rangeland assessment for the Pine Hollow Watershed Enhancement Project, determining range condition for individual ranch management plans, and working with ranchers to develop management plans for their property, including alternatives for management changes and projects to enhance the watershed. Special training includes "Proper Functioning Condition" workshop for stream assessment (June 1997).

#### **Recent Positions and Prior Experience in Range Management**

*Soil Conservationist, Natural Resources Conservation Service, Moro, Oregon. 1993-1996.* Duties included implementing the Food Security Act rules and regulations,

working with private landowners to develop conservation plans for their farms or ranches, and working with the local SWCD board to address their concerns. Other duties included serving as a member of the “Prescribed Fire Cadre” for the State of Oregon. Special training included a workshop on the Grazing Lands Application software for developing range management plans.

*Ranch Operations. 1991-1993.* Assisted in the operation of a dryland wheat and cattle ranch.

*Range Technician, U.S. Forest Service, Bear Valley Ranger District, John Day, Oregon. 1989-1991.* Duties included monitoring livestock distribution and utilization to achieve proper forage use, analyzing range resource condition and trend on Forest range allotments, and working with livestock permittees to develop workable Allotment Management Plans.

### **Education**

*Bachelor of Science, Agricultural Business Management and Rangeland Resource Management, Oregon State University in conjunction with Eastern Oregon State College. 1989.*

*Proper Functioning Condition. June 1997.*

*Grazing Lands Application Software. 1994.*

### **Jeffrey Hopkins-Clark**

**Watershed Coordinator, Sherman Soil and Water Conservation District  
and Wasco Soil and Water Conservation District**

**Approximately 25 hours per month devoted to Pine Hollow Watershed**

### **Current Responsibilities:**

Began working for Sherman and Wasco Soil and Water Conservation Districts in February 1997. Coordinate meetings and activities for six watershed councils in Sherman and Wasco Counties: Pine Hollow WC, Bakeoven WC, Fifteenmile WC, Gerking Canyon WC, Fulton and Gordon Canyons WC, and Grass Valley WC. Write agendas, minutes, grant proposals and reports, research projects, coordinate monitoring activities.

### **Recent Positions**

*Field Supervisor at Mt Hood Organic Farm, Mt Hood OR. 1996 Field Season.* In charge of four to seven person field crew performing various orchard tasks throughout growing season.

*Teaching Assistant, Department of Horticulture and Landscape Architecture, Washington State University. Fall 1994 to Fall 1995.* Responsible for organizing laboratory classes, testing students, grading lab reports and tests.

*Research Assistant, Department of Horticulture and Landscape Architecture, Washington State University. Fall, 1993 to Spring 1994.* Responsible for proposing, organizing and reporting on research projects in composting and biological pest management.

### **Prior Experience in Community Development and Environmental Management:**

*Peace Corps/Honduras 1991-1993.* Coordinated soil conservation project that taught subsistence-level farmers techniques to conserve soil, improve water quality and increase incomes. Coordinated public sanitation project, which helped small community to build latrines from concrete and rebar, for the purposes of improving water quality and reducing disease. Both projects involved applying for and managing funds from the US

Agency for International Development (AID), as well as coordinating the efforts of several Honduran government agencies and community organizations.

**Education and Training:**

*Bachelor of Arts, Environmental Studies, Pitzer College, 1991.* Emphasis consisted of ecology and water policy.

*Master of Science, Horticulture, Washington State University, 1995.* Thesis compared alternative agriculture techniques to conventional for effects on growth and yield.

*Peace Corps.* Extensive training in community development and land management planning.

**Krista Coelsch**

**District Coordinator, Sherman Soil and Water Conservation District**

**Approximately 15 hours per month devoted to Pine Hollow**

**Current Responsibilities:**

Began working for Sherman County SWCD in September 1993. Responsible for filing, payroll, tax reporting and record keeping for all Sherman County SWCD funds, including Pine Hollow funds from various sources. Member of budget committee. Supervises subordinates, including watershed coordinator. Maintains a knowledge of local, state and federal programs and laws affecting SWCDs, as well as the political structure in which the SWCD operates. Maintains a clear understanding of personal and professional relationships within Sherman County and the Lower Deschutes Subbasin.

**Recent Positions and Experience in Fiscal Management and Natural Resources**

Prior to February 1997, wrote grant applications, agendas and minutes for watershed councils, in addition to current duties.

*Sherman County Weed Survey Crew Supervisor. 1993, '94, '95 seasons.* Supervised crew of four to six, surveyed river corridors and other critical areas of county for noxious plant species.

*Clerk/Secretary. Horizon Restoration, Inc. October 1990 to June 1991.* Maintained purchase orders and timekeeping records for an ecological restoration firm.

**Education and Training:**

*Columbia Gorge Community College. 1989-90.* Course work in Business Math and Computers.

*Proper Functioning Condition Training. August 1997.* Oregon Cattlemen's Association, Antelope OR.

*"Microsoft Office" Training. February 1996.*

*Filing and Archiving Training. October 1995.*

*Total Quality Management Training. April 1994.*

*Stream Assessment Training. September 1995.* Oregon Department of Fish and Wildlife and Wasco Soil and Water Conservation District, Dufur, OR.

**Robert L. Martin**

**Soil Conservation Technician, NRCS**

**Approximately 30 hours per month dedicated to Pine Hollow**

**Current Responsibilities and Qualifications:**

Began working for NRCS in March 1990. Responsibilities include layout, design, and construction inspection on terraces, sediment basins, flood-retarding structures, spring developments, fences, reseedings, etc. One of two NRCS employees in the state who is certified to run nuclear soil moisture testing equipment for compaction and moisture in dam construction. Has participated in the Buck Hollow 2000 Project since inception. Has helped design, layout and check at least 40 flood control structures in the Buck Hollow 2000 Watershed Project. Has laid out approximately 60,000 feet of level and gradient terraces in Buck Hollow Project Area. Oversees planning and completion of projects throughout Sherman County.

## **Section 10. Information/technology transfer**

### **Use in other Watershed Councils**

Watershed Councils in both Sherman and Wasco Counties operate in close association with Soil and Water Conservation Districts. Many of the individuals listed in section 9 also work with other SWCDs. Skills and experiences gained in Pine Hollow already improve projects in other watersheds around the two counties. In addition, these two SWCDs communicate ideas with other districts in the Deschutes Basin, which are working on watershed improvement projects in their own regions.

### **Newsletter**

Both Sherman and Wasco SWCDs publish newsletters describing conservation projects in the two counties. Wasco SWCD publishes six newsletters per year, and distributes to over 1100 individuals. Sherman SWCD publishes four newsletters per year, and distributes to 287 individuals. Updates on the Pine Hollow project are regularly published in both of these newsletters.

### **Proper Functioning Condition Method and Data**

Landowners in the Pine Hollow Watershed attended a training session in Proper Functioning Condition which was hosted by Oregon Cattlemen's Association. They attended a classroom session in the morning and then went to a canyon near the headwaters of Pine Hollow and analyzed the condition of the stream using the methods in which they were being trained. The same method will be used to analyze the rest of the watershed in spring 1998. Results will be written into an assessment document to be used in planning Phase 2 of this project (Stream/Riparian enhancements). The Phase 2 Action Plan will be written using these data, and will be available upon request from the Pine Hollow Watershed Council.